

REMARKS

Claim 24 has been amended to correct a clerical error. The subject matter of Claim 27 has been incorporated to Claim 1, and the typographical error from Claim 27 is corrected. Consequently, Claim 27 has been canceled. Thus, no new matter has been added. Applicants respectfully request entry of the amendment and reconsideration of the present application in view of the amendments and following remarks.

Claim Objections

Claim 24 has been objected to under 37 C.F.R. 1.75 (c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. However, Claim 24 does limit the subject matter, since Claim 1 recites 16 items and Claim 24 recites only 5. Therefore, 37 C.F.R. 1.75 (c) is not applicable. Applicants respectfully request the withdrawal of the objection.

Claim 27 has been objected to because of an informality. As noted above, the claim has been canceled and incorporated into Claim 1 along with a correction of this informality. Applicants respectfully request the withdrawal of the objection.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3, 4, 6-8, and 24-27 have been rejected under 35 U.S.C. 103 as being unpatentable over the English translation of Ishihara. The examiner asserts that Ishihara describes the laminate structure including an insulating silicone rubber layer 5 and a laminated outermost layer 4 (conductive silicone layer), the insulating silicone rubber layer 5 comprises thermally conductive filler 2 blended with silicone gel, wherein the thermally conductive filler 2 may be metal etc, and the outermost layer 4 comprises short-fiber shape pitch based carbon fiber and silicone rubber.

However, the insulating silicone rubber layer 5 disclosed in Ishihara is, as stated, insulative, while the layers of the present invention are all electrically conductive. Further, Ishihara lists metals such as silver, gold and aluminum as examples of thermally conductive fillers, and states “At least a kind of thermally conductive filler chosen from the aluminum oxide,

magnesium oxide, the boron nitride, aluminum nitride, the silicon carbide, and aluminum hydroxide which are excellent in electric insulation also in it is preferred.” Therefore, even if the thermally conductive fillers are included in the insulating silicone rubber layer 5, such a low volume resistance recited in Claim 1 would not be obtained. Thus, the insulating silicone rubber layer 5 of Ishihara does not match with a conductive substrate layer specified in Claim 1.

Ishihara teaches substitute materials for the silicone gel and the silicone rubber, and describes the matrix polymer in Paragraph [0014]:

[0014] As matrix resin in this invention, although silicone rubber, epoxy resin, urethane resin, fluoro rubber, etc. are mentioned, silicone rubber is preferred in that it excels in processability, high heat resistance, and small the temperature dependence.

As indicated in the paragraph, Ishihara teaches using characteristics such as processability, high heat resistance and the temperature dependence as guidelines to select the material, and is totally silent about the volume resistance. Importantly, the electrical conductivity is largely depending on a matrix polymer when conductive fillers are mixed with the matrix polymer. Ishihara does not teach or suggest any specific value of resistivity (conductivity) to be achieved and provide no guide line in this regard. In the present invention, a low-resistance layer comprises specified thermoplastic resins to attain a volume resistivity of 0.1 to 1.0 Ωcm . Therefore, person with ordinary skill in the art would not come up the present invention from the disclosure of the cited reference.

Moreover, Claim 1, as amended herein, recites very specific limitation “a volume resistance of the conductive resin film as a whole in a thickness direction is 0.01 to 5 Ωcm .” Person with ordinary skill in the art hardly reaches this low level resistivity from Ishihara’s disclosure such as the use of insulating silicone rubber and a suggestion to use insulative material as the thermal conductive filler (paragraph [0017]).

In view of these facts, the cited reference fails to teach those specific features of the subject matter in Claim 1. Accordingly, the cited reference would not match with the present claimed invention. Thus, Claim 1 could not be rejected on this ground. The rest of the rejected claims are either depending on Claim 1 or eventually depending on Claim 1. Therefore, the dependent claims are patentable for the same reasons with Claim 1. Applicants respectfully request withdrawal of the rejection.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3, 4, 6-8, and 24-27 have been rejected under 35 U.S.C. 103 as being unpatentable over Takatomi et al. in view of English translation of Sakamoto et al. Takatomi discloses electroconductive sheets containing resins and electrically conductive fillers and the electroconductive sheet may be a multi-layered composite sheet of two or more different type made of polymer substances (column 4 lines 55-58). Sakamoto discloses single layer conductive sheets and a volume resistivity of $1 \text{ cm}\Omega$ or less. The Examiner combines two references and equates the combines with the present claimed invention.

However, none of the references teaches or suggests “a volume resistance of the low-resistance layer in a thickness direction is 1/5 or less of a volume resistance of the substrate layer in a thickness direction”, which is crucial to control a contact resistance with a contacting article. (page 12, line 17-19) Thus, even if combined, the references would not meet Claim 1. The rest of the rejected claims are either depending on Claim 1 or eventually depending on Claim 1. Therefore, the dependent claims are patentable for the same reasons as Claim 1. Applicants respectfully request withdrawal of the rejection.

CONCLUSION

In the light of the applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersign at the telephone number appearing below.

Application No.: 10/519,339
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No Disclaimers or Disavowals

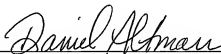
Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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AMEND
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